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ABSTRACT

In response to unmet health needs of high school youth particularly those in ghetto schools, health fairs were organized at three inner-city high schools in New York. The purposes of all three fairs were similar: to disseminate health information, to perform selected health testing, to provide follow-up activities when necessary, and to engender familiarity and positive attitudes towards preventive health measures and medical care. The fairs were a combined effort of students, faculty, the health department, and other related agencies. This paper analyzes the events preceding initiation of the fair, the planning of the fair, the screening of results, educational efforts, and follow-up activities in an effort to determine the effectiveness of these fairs as an alternate approach to school health problems. (JA)

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THE HIGH SCHOOL HEALTH FAIR

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INTRODUCTION

In 1972, a number of high schools in New York City offered mass health testing and health educational activities to their students. These efforts, generally concentrated in a one-week period, were initiated by school faculty and students and were designated by them as "health fairs." Although health fairs associated with outdoor street parties and similar events have been popular in New York City since 1968, the emergence of a high school based fair oriented to student health needs is a relatively recent phenomenon. The high school health fair reflected a general appreciation by the school faculty of the presence of unmet health needs in adolescents attending high school. This was coupled with a sense of dissatisfaction with the inadequacy of more traditional school health services. In this paper, the role of the high school health fair will be examined by describing three fairs that were held at large core city high schools in 1972. The events preceding initiation of the fair, planning of the fair, screening results, educational efforts and follow-up activities will be analyzed in an effort to determine the effectiveness of these fairs as an alternate approach to school health problems.

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Traditional school health services for the high school student have been oriented to a casefinding approach such as a physical examination at some point during the four-year period. In many cases, high school health services have been limited to emergency care or exams for athletic competitions. The efficacy of the physical appraisal approach for case-finding has been questioned by many including Rodgers who in a study of almost 1,000 high school student examinations found the yield of newly discovered medical important disease to be small.[1] Ninety-six percent of the defects found fell into the five categories of vision, hearing, dentition, nutrition and skin and most could have been identified by routine screening procedures of Snellen vision testing, audiometry, height and weight measurement, and inspection of the skin and teeth.

In contrast to the white middle-class high school students studied by Rodgers and Reese, ghetto youths have more serious unmet health needs.[2] Of 623 Neighborhood Youth Corps enrollees evaluated by Salisbury and Berg, forty-seven percent had significant abnormalities and one-third of these were major and life interfering.[3] Less than half of the afflicted youths had received any form of treatment. The recent study by Brunswick and Joseph of Black adolescents in Harlem pointed to the prevalence of dental, vision, blood pressure and emotional

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disorders in this population.[4] The adolescent is also at risk for skin problems, drug addiction, venereal disease, unwanted pregnancy, obesity, and accidents.[5]

There still exists a scarcity of appropriate resources to effectively respond to adolescent health problems despite a marked increase in the number of adolescent health services in the past 10 years. School health programs have typically not met these needs because of limited resources and orientation to sporadic casefinding activity, absence of linkages with diagnostic and treatment facilities and little attention to health education.

In New York City, high school health services began considerably later than those in the elementary and junior high schools. School health service was started in 1926 in the vocational schools and in 1945 in the public academic high schools.[6] At present, the Department of Health supplies services to nearly three-quarters of the public high schools and one-half of the parochial schools. Thus, 193 schools with a registration of 350,000 students were served in 1972. All children are supposed to have a complete physical examination shortly before entering high school by a Health Department or private physician. In the last year of high school, another examination is required by the school or private physician.

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In addition to these examinations, follow-up immunization and working paper exams represent the bulk of school health activity. In 1972, over 40,000 physical exams on newly admitted or senior students were carried out. The extremely limited resources devoted to this activity and the high numbers of required examinations restrict opportunity for follow-up, health education and integration with the school educational program. In fiscal year 1974, $1,035,000 was allocated to this health program representing an annual expenditure of approximately $3 per student enrolled in schools with high school health services.

THE HEALTH FAIRS

Initiation

School health fairs were initiated by the school faculty, often with student cooperation. Common factors in the initiation of all three reported fairs were a desire to "do something" for the health of the students and a dissatisfaction with existing school health services. In addition, the fair was seen as a school-wide activity that could unify and involve the students. An early health fair at one of the three high

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School A, located in upper Manhattan, had an enrollment of approximately 3300 in 1972, with 30% of the students absent on any given day. The ethnic composition of this school was approximately 70% Hispanic, 25% Black and 5% white. In the year preceding the fair, the school was beset by riots and racial disturbances which resulted in the school being closed for three-quarters of that year. Most of the Hispanic students were recent arrivals from the Dominican Republic and had little contact with the health care delivery system of this country. The health needs of those and other students and the desire for a school-wide project were motivating forces preceding the fair. The fair was held in October 1972.

School B, located in mid-Manhattan is a relatively new high school drawing most of the student body from East and Central Harlem. The student registration was 6,300 with an average attendance of 4,000. The ethnic composition of this school was approximately 60% Black, 32% Hispanic and 8% White. A fair held in April 1972 had been enthusiastically received. The fair described in this paper was held in April 1973.

School C is located in a middle-class neighborhood of the Northwest Bronx. The school population is drawn from a wide area including the South Bronx and Central Harlem. The school opened in September 1971 and was without a senior class at the time of the Health fair. The school enrollment was 3700 with a daily absenteeism of 20%. The ethnic distribution

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was 41% Black, 38% White, 20% Hispanic and 1% other.

Planning

A planning committee was formed at all three schools. Led by a member of the school faculty, members included students and representatives of the New York City Department of Health, the district health officer and public health nurse. The Health Department representatives, in addition to a consultative role, were requested to commit their departmental resources to provide the proposed mass testing and some of the educational activities.

The purpose of all three fairs were similar: to disseminate health information; perform selected health testing; provide follow-up when necessary; and to engender familiarity and positive attitudes towards preventive health measures and medical care. A series of planning meetings were necessary so that there was common agreement among students, faculty, Health Department and other agencies about the basic assumptions of the propored effort. In addition, the organizational arrangements for testing several thousand children were complex and required detailed planning. The basic planning assumptions, emphasized by representatives of the Health Department and agreed to at all three fairs were:

1) The largest dividends from the proposed fairs would probably be educational rather than detection. Thus, the major effort should be directed at educating the student body both at the fair and in the preceding months.

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2) Screening tests performed should be selected on the basis of applicability to the school population, availability of appropriate intervention for the condition screened, ease of performance and relevancy to health education efforts.

3) All students should receive specific instruction before the fair about the nature of the tests and the meaning of a positive result, so that anxiety surrounding the testing process could be reduced.

4) Accurate recording of all tests was mandatory. At the end of the fair, each student should have a record of tests performed and their results and a copy should be incorporated into the school medical record.

Services Offered

Screening Activities:

A number of screening examinations were identified as being relevant, feasible and amenable to follow-up. These included vision and hearing screening, blood pressure determinants, nickle spot testing, tuberculin skin testing and serologic testing for syphilis. In addition, at Schools B and

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C hematocrits and gonoccocal cultures were performed. At School B dental screening was included and at School C podiatric screening examinations were carried out. Screening examinations such as vision screening, blood serologies and sickle cell testing were carried out in an open gymnasium area at a designated booth. These exams requiring quiet or privacy, including audiometry, pelvic exams and blood pressure determinations, were performed in separate rooms.

Visual acuity was measured by the Snellen test. Corrected vision was tested. A defect was considered significant if the visual acuity was 20/30 or less in at least one eye. Hearing was tested with a true tone audiometry at 15 decibel intensity at frequencies of 500-4000 cycles per second. A technician from the New York League of the Hard of Hearing performed the testing at School A. At School C volunteers with minimal training were utilized. Tuberculin skin testing was performed utilizing intermediate strength Jet Injection guns were used at Schools A and B. Sickledex was the method employed for sickle cell screening at School A. In cases of positive reactions, venous blood were drawn for hemoglobin electrophoresis. At Schools B and C venous blood samples were collected at the fair and sent to a laboratory for [illegible]

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Dental exams were performed by a dental hygienist who used a mouth mirror, explorer and illumination. The presence of decayed, missing, or filled teeth, malocclusion, poor oral hygiene or chronic pain was recorded. Pelvic examinations were performed by physicians on volunteering females in Schools B and C. At School B, preceding the examination a group discussion was held on family planning, venereal disease and sexuality. This included a description of a vaginal exam that utilized a plastic model. Cervical, urethral and anal cultures for gonococcus were performed at the schools. Podiatric exams were performed at School C by volunteer podiatrists from a local hospital.

Educational Activities:

In addition to the extensive health educational activities that preceded the fair, concentrated efforts took place during Fair Weeks at Schools A, B and C. Health education was provided by the Department of Health and a wide variety of municipal and voluntary agencies as well as other groups. Education included venereal disease, dental health, smoking, drug abuse, sex education, mental health and health careers.

Education was provided both at booths in gymnasium or library areas and in separate classrooms. Booths were used for nutrition and staffed by a nutritionist who gave talks to groups of students. Similarly the American Cancer Society

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and Venereal Disease Program had demonstrations and talks at booths. Classrooms were utilized for films on dental health and sex education. The latter was carried out by both family planning agencies and voluntary groups.

At School B, a "Woman's Health Center" operated for two days and offered rap sessions and counseling on any questions relating to the female student sexuality and health needs. At School C, a Bronx "Right to Life" group requested and was granted "equal time" to express their views against abortion.

Implementation

The first step in implementation of the fairs was to involve the student body, school staff and parents. A high participation rate at the fair was dependent upon parental consents for the testing process.

Public health nurses spoke at a number of teacher meetings about the purposes of the fair and described the conditions being tested for including sickle cell anemia, tuberculosis, hypertension and vererеal disease. At School A, effort was focused on health education teachers who devoted their hygiene classes to these subjects for six weeks preceding the fair. Public health nurses also spoke at evening meetings of the parents associations.

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At School B, a rap session week was held several weeks before the health fair. During the rap session week, students participated in informal group discussions with outside specialists on birth control, venereal disease, drug addiction and health careers. About two-thirds of the attending student body were reached. The sessions were held in subject classes. At School C, there was relatively little education prior to the fair. Only the five classes of pre-nursing students received preparatory health education information.

Because of the large number of enrolled students, the fairs were organized so that the students could come for testing and to the educational activities in relatively small groups or squads. At School A, each class was divided into smaller two squads. Each squad was scheduled for testing or education during their physical education periods during the week of the fair. Signed consents were exchanged for 3x5" health fair cards on which results of the various tests could be entered. The cards were held by the squad leader (a teacher) and given to the students when they entered the gym testing area. At the end of the week the card and test results could be attached to the school medical record. Similar arrangements were made at School B and C.

Students and parents served as volunteers for the fair. In addition, large numbers of Health Department staff were needed for testing and education. At the three fairs, approximately 12 to 20 technicians and public health nurses

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had to be available for the whole week for testing procedures. A total of 50 individuals including Health Department staff, teachers and volunteers was needed at each of the three fairs for screening and education activities as well as the attendant administrative and clerical duties.

RESULTS

At School A, 1100 parental consents were returned, at School B, 2500 consents were returned, and at School C, 1000 parental consents were returned. Thus, from 27-38 percent of the student enrollment at these schools had consents for the testing.

A summary of the screening results appears in Table I. Corrected vision was tested at all three schools and from 12-19 percent of the students had visual acuity of 20/30 or less in at least one eye. Those students all received referrals to a Health Department eye clinic or local medical facility. At Schools A and C, audiometric examinations disclosed abnormalities in 3 percent and fifteen percent of the students. While other investigators have disclosed similarly wide ranges in the proportion of abnormalities in audiometric testing of adolescents, a contributing factor to this variance may have been the use of a trained technician in School A and a [illegible] in School C.[3,7]

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Hypertension screening disclosed eight percent of the students in School A and ten percent of the students in School B having blood pressures greater than 140/90 and fifteen percent of the students in School B having blood pressures over 135/80. These students were retested after the fair and those with persistent elevations were referred to a nearby hospital with hypertensive clinic. At School A, 75 percent of students with initial elevations required referral.

A range of 4-8 percent of the students skin tested at Schools A, B and C reached positively to tuberculin. Of the 109 positive reactors at School B, 70 gave a history of prior BCG innoculation. History of BCG innoculation was also obtained in approximately one-half of the positive reactors at School A. All positive reactors were referred to a Health Department Chest Clinic. Isoniazid prophylaxis was employed on positive reactors without history of BCC innoculation. In each of the three schools, a case of previously unknown active tuberculosis was found. One of these was minimally advanced, one was moderately advanced and the third was far advanced. Many of the students tested with intermediate PPD did not return for reading of their skin test. Of the 842 tested at School A, 501 or 60 percent returned for reading. At School B, the return rate was 53 percent.

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In School B, thirteen percent of the students were found to have hematocrits below 38. In School C, where a different standard for referral was used, two percent were found to have hematocrits below 35. These students were referred to local medical facilities for diagnostic investigation. Sickle cell screening revealed that 4-7 percent of the Black and Hispanic students in these schools had sickle cell trait. All of these students received group or individual counseling by public health nurses in the school after the fair. Four cases of homozygous SS hemoglobin, sickle cell anemia, were found in the testing process. All of those were previously known.

Of the 2,016 students receiving the serologic test for syphilis (VDRL) at the three high schools, there were 14 positive results. These were referred to Health Department Venereal Disease Facilities where further studies (Fluorescent Treponemal Antibody) revealed that all were false positives.

At School B, where nineteen female students received gonococcal cultures, two were positive (11%). This was a highly selected group who volunteered after group discussions on sexuality and venereal disease. At School C, where 182 females were cultured, only one positive was found. All three females with positive cultures were referred to Health Department facilities where they received treatment for gonorrhea.

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Dental examination of almost 1300 students at School B resulted in a 27 percent referral rate. Podiatric examination of 309 students at School C resulted in 35 students being referred to a local hospital. Seventy-five percent of the podiatric referrals were accounted for by pes planus, bunions, corns and calluses.

DISCUSSION

Three health fairs in large inner-city high schools have been described. There is a need for new approaches to providing health services for adolescents attending high school. Traditional programs have been poorly received by the student and school faculty alike. Poorly financed and staffed, the benefits of these programs in casefinding, follow-up of discovered health problems or health education have not been documented. Experience with the fairs leads to a major question: To what extent does the high school health fair represent an alternate method for providing school health services?

These fairs were "crash" one-week efforts offering a variety of screening procedures and health educational activities. A range of fair orientation efforts and information dissemination preceded the fairs at two of the three schools. The screening effort produced significantly greater yield than was originally anticipated. Elevated blood pressure, vision and hearing defects, and dental

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abnormalities were discovered in large numbers of students. The vast majority of these defects were unknown to students or the school health service prior to the fair. In addition, three active cases of tuberculosis was discovered and placed under treatment. A number of tuberculin positive youths were placed on isoniazid prophylaxis. Three females were discovered to have gonorrhea and subsequently received treatment.

A striking advantage of the high school health fair method is the high degree of faculty and student interest and participation associated with this activity. Whereas traditional school health services often operate in isolation from school staff and student body, these fairs were initiated by teachers and students who then played a major role in implementation. The general enthusiasm surrounding the fairs facilitated acceptance of both the screening procedures and educational programs.

There were also major disadvantages and limitations associated with the fairs at the three schools described. Despite vigorous recruitment efforts, consents for testing could only be obtained for one-third of the student body. This is partially explained by the fact that each of the schools had an absenteeism rate of approximately 30 percent.

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There are also limitations in any mass screening process which attempts to test between 1000--2000 students in a four-day period. The sheer numbers of students leads to severe logistical and organizational problems. Coordination of students squads with the individual tests were not always smooth. Although students were scheduled to come for testing in defined groups, some enthusiastically tried to get all the tests on the first day. Despite pre-scheduling of tuberculin reading, only about 60 percent of students returned to the testing area at the designated time. Records were student and teacher carried and many were incomplete at the end of the fair week. Because of the large numbers of students tested, many of the screening procedures carried out in the gymnasium lacked privacy or sufficient dignity. Discomfort was observed in some students who had a positive reaction to a screening exam particularly when they were surrounded by their peers. There was also student concern about confidentiality and some expressed fear that the school staff would learn of abnormal test results.

There were associated difficulties with the testing procedures themselves and with maintaining complete and accurate records on the results. One of the fairs utilized different standards or cut-off points for defining elevated blood pressure or anemia. Audiometry at one fair was carried

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out by virtually untrained personnel. Although audiometry and blood pressure determinations were carried out in private rooms, the lines of students outside of these rooms with resulting noise created a less than ideal testing environment.

Follow-up was particularly successful for those conditions which were clearly life interfering and for those abnormalities for which adequate resources were available. Students who had positive tuberculin tests, elevated blood pressures, positive gonoccal cultures, and low hematocrits received prompt and appropriate follow-up measures. Students with visual and dental defects received referrals to outside agencies but further follow-up was uneven in the three schools.

All students participated in the health educational activities and were scheduled for the health exhibit. Although there was interest in sex education and drug abuse information, apathy was observed at many of the educational exhibits. The students were clearly more attracted to the drama and excitement of the screening procedures than to the educational booths.

On balance, the high school health fair is a potentially valuable alternate means of approach to adolescent health needs within the school setting. Other referrals for selected

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prevalent and functionally important conditions within this population is a worthwhile endeavor, particularly when compared with the yield of routine physical examinations. Health education associated with screening for common conditions can be action oriented and linked with specific health care seeking behaviors.

The shortcomings in the three fairs described can be overcome, for the most part, by modifications and careful planning. The entire student body of the large inner-city school should not be tested in one week period. Rather each year, one grade of students can be tested (e.g. tenth or eleventh grade). By reducing the numbers of students involved, testing, record-keeping and follow-up become manageable. For a year preceding the fair, health educational effort can be directed to the wide scope of conditions and behaviors to be emphasized at the fair. For the week before the fair, all classes can have health themes. Orientation of the students is also needed in this period to diminish anxiety associated with the testing period. The testing itself should be performed by a trained team who are utilized at all high school fairs within a region. Before each fair, close liasion with treatment agencies and follow-up procedures must be established.

In concern about and action directed at adolescent health

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problems. This mass screening approach combined with related health education can be an effective response to student health needs if accompanied by appropriate safeguards.

DPH:AM:CE/ma

August 5, 1974

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TABLE 1 - SCREENING RESULTS: THREE HIGH SCHOOL HEALTH FAIRS - 1972-1974

Screening	SCHOOL A			SCHOOL B			SCHOOL C		
	Number Tested	Requiring retest or referral		Number Tested	Requiring retest or referral		Number Tested	Requiring retest or referral	
		Number	Percent		Number	Percent		Number	Percent
Vision	657	126	19%	1280	159	12%	1069	165	15%
Hearing	650	17	3	NP*			627	91	15
Hypertension**	821	79	10	1643	138	8	757	125	17
Tuberculin	842	37	4	1439	109	8	497	30	6
Hematocrit***	NP			1606	203	13	404	10	2
Sickle Cell	705	31	4	1606	114	7	406	24	6
Syphilis Serology	295	1	0	1488	11	1	133	2	2
Gonococcal Culture	NP*			19	2	11	182	1	1
Dental	NP			1296	350	27	NP		
Podiatry	NP			NP			309	35	11

* NP - This screening activity not performed at particular fair.

** In Schools A & B, students were referred for retesting if blood pressure readings were greater than 140/90. In School C, retesting was performed if readings were greater than 135/80.

*** In School B, referrals were made on all students with hematocrits below 38%. In School C, referrals were made on all with hematocrits below 35%.

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